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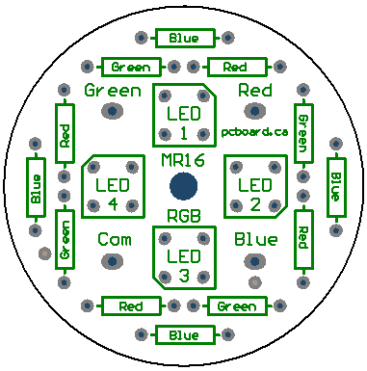
LED MR16 RGB
4-LED MR16 Display



LED MR16 RGB – 4-LED

Light Emitting Diodes (LEDs) are an attractive, economical and convenient option for lighting applications. Available in a wide variety of colors, styles, sizes and intensities, LEDs provide for inexpensive, highly-efficient, low-voltage, reliable lighting solutions. Applications range from lighting in aquariums, recreational vehicles, marine & aircraft to computer case mods, under-vehicle lighting, emergency/security lighting and accent-lighting in the kitchen and around your home – the options are endless.

One challenge with LEDs is the mounting of the displays. We produce several innovative solutions, including the ***LED MR16 RGB***.

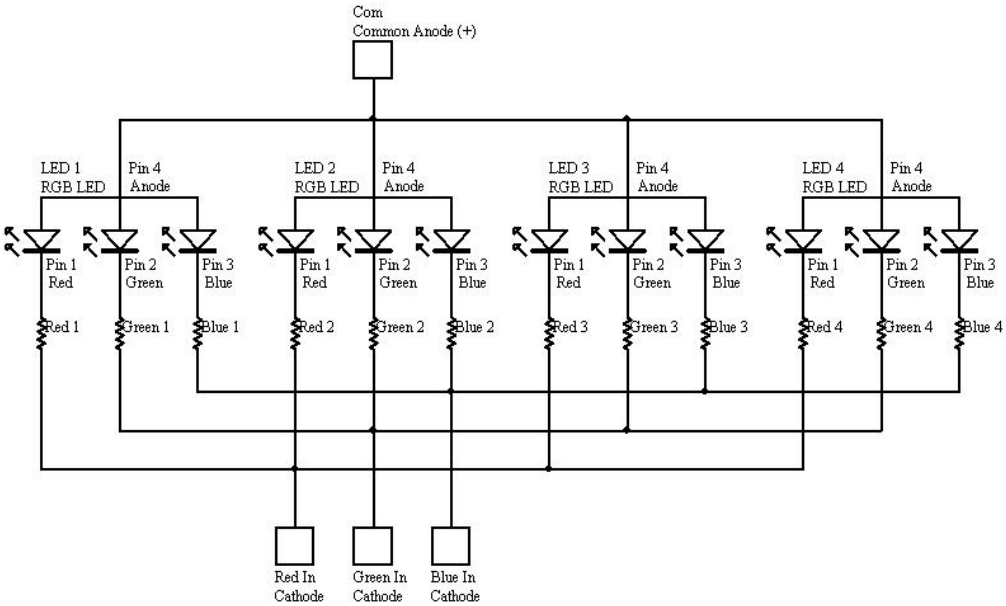
The ***LED MR16 RGB*** holds 4 special RGB Piranha / Super Flux LEDs on a compact 1 7/8" (48mm) diameter board. The design allows the board to fit into standard MR16 down light frames (12v 50W halogen frames). The RGB Piranha LEDs are special in that they actually contain three LEDs in one package: a green, red and blue LED. Each LED is controlled separately from the others, with only a common power pin being shared between the units. The configuration allows for a complete rainbow of colors and tones to be created by varying the current to each of the red, green and blue dies (LEDs) in the package.

Three inputs are provided on the ***LED MR16 RGB***, located at the terminals labeled ***Red***, ***Green*** and ***Blue***. The common power pin, where positive current is connected (the display is a Common Anode type unit) is located at the terminal labeled ***Com***.

Each LED has three separate current limiting resistors – for a total of 12 resistors on the board. The resistors will be different values for the ***Red***, ***Green*** and ***Blue*** elements – this is because each color of LED requires different current limiting. The chart below will aid you in calculating the correct resistor values based on the power applied to the board.

The current limiting resistors used on ***the LED MR16 RGB*** should be 1/2-watt models, as the current handling requirements to be dissipated through them is higher than what is available using conventional 1/4-watt models.

To power up your board, apply '**-**' (negative) to either of the "***Red***", "***Green***" or "***Blue***" terminals, and apply '**+**' (positive) to the pad labeled "***COM +***".



The value of the current limiting resistor is determined by the supply voltage to the circuit, the voltage drop across each LED and the current desired through the circuit. As a rule, keep the current through each leg of the circuit to approximately 20mA to 25mA, which is normally the standard for LEDs. The chart below will assist you in determining the correct dropping resistor needed for your specific application.

Resistor Selection Chart

LED Type/Color		White, Green & Purple	Blue	Red & Yellow
LED Forward Voltage		Vf=3.2v	Vf=3.3v	Vf=2.0v
Supply Voltage	14.6v to 15.0v	620-ohm	620-ohm	680-ohm
	14.1v to 14.5v	620-ohm	620-ohm	680-ohm
	13.6v to 14.0v	560-ohm	560-ohm	620-ohm
	13.1v to 13.5v	560-ohm	560-ohm	620-ohm
	12.6v to 13.0v	510-ohm	510-ohm	560-ohm
	12.1v to 12.5v	470-ohm	470-ohm	560-ohm
	11.6v to 12.0v	470-ohm	470-ohm	510-ohm
	11.1v to 11.5v	430-ohm	430-ohm	510-ohm
	10.6v to 11.0v	430-ohm	430-ohm	470-ohm
	10.1v to 10.5v	390-ohm	390-ohm	430-ohm

½ watt Resistor Color Codes

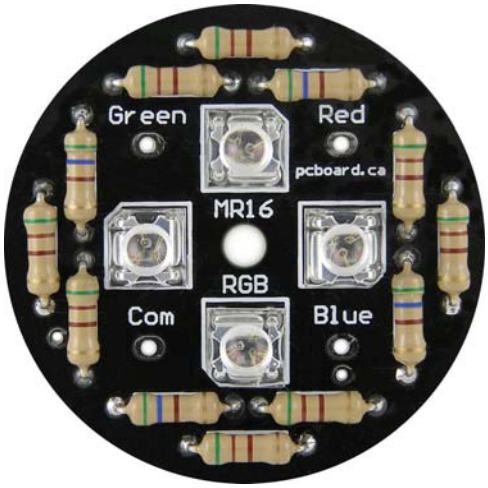
390-ohm (orange-white-brown-gold)	430-ohm (yellow-orange-brown-gold)	470-ohm (yellow-violet-brown-gold)
510-ohm (green-brown-brown-gold)	560-ohm (green-blue-brown-gold)	620-ohm (blue-red-brown-gold)
	680-ohm (blue-gray-brown-gold)	

For example, if you were going to run White LEDs in an automobile, the normal battery voltage of a car is approximately 13.8v. Based on the chart, the supply voltage is between 13.5v and 14.0v and the White LED option shows you would require a 560-ohm dropping resistor.

It is important to use the correct current limiting resistor, using a value too low can result in permanent damage to the LEDs. If you use a value larger than is needed, the LEDs will not glow as brightly and no damage will occur.

12v Kit Option

If you purchased the ***LED MR16 RGB*** kit option, your kit includes the basic components necessary to construct the system. Your kit will contain a total of twelve (12) resistors, eight 510-ohm (green-brown-brown-gold), four 560-ohm (green-blue-brown-gold) along with four RGB Piranha LEDs.



The eight 510-ohm resistors will go be mounted on the board in the "Green" and "Blue" resistor locations, while the four 560-ohm resistors go to the "Red" resistor locations.

When mounting the four RGB LEDs, ensure that the flat-corner of the LEDs match the flats indicated on the silk-screen on the board. Mounting the LEDs incorrectly could damage them.

Upon completion of the kit, your board will be ready to accept input from any device which outputs between 11v and 15v DC to the Red, Green or Blue inputs.